The Rise of Mobile Internet Use in Britain

Grant Blank, William H. Dutton and Julia Lefkowitz

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OxIS 2019: The Rise of Mobile Internet Use in Britain

by Grant Blank, William H. Dutton, and Julia Lefkowitz

A report on the 2019 Oxford Internet Survey, Oxford Internet Institute, University of Oxford. The authors thank the UK Department for Digital, Culture, Media & Sport; Google Inc., and BT, for their support of this survey. This report is the third in a series of reports on OxIS 2019. The first report provided an overview of key themes, see: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3493763 The second focused on the narrowing but deepening digital divides across the nation, see: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3522083 All reports in this series are available on the Oxford Internet Survey (OxIS) blog: https://oxis.oii.ox.ac.uk/blog/.

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In the short time from 2013 until 2019 the use of mobile has been the most dramatic change in how individuals in Britain use the Internet. This reflects a global trend in the adoption of mobile phones and mobile Internet use.[1] However, the uniquely UK dynamics and consequences of this transformation are starkly illuminated in our OxIS research. The findings demonstrate how embedded the Internet has become in Britain and also how mobile Internet has become not simply a desirable innovation, but an essential aspect of everyday life and work.

Most generally, the value of mobile is evident not only in its adoption, but also in the swift rise in the number of ways people are using mobile Internet – primarily through smartphones – to perform many of the functions previously done almost exclusively on desktop computers and laptops. In some respects the speed of the shift to mobile has been analogous to the shift from black and white to colour TV. While black and white TV diffused slowly, the introduction of colour took off far more rapidly. The prior familiarity of many Internet users with mobile phones and the Internet facilitated the

[1] James Katz (2008) (ed.), *Handbook of Mobile Communication Studies*. Cambridge, MA: MIT Press.

move to a mobile Internet device – making Internet use simpler and more flexible as the two technologies converged. This helps to explain how this shift could occur so rapidly but it also raises more questions about who is left out, and what difference it makes.

This diffusion has had major social consequences, since mobile has enabled people to more closely embed the Internet in their everyday lives, such as through finding directions, making payments or managing bank accounts on their mobile.[2] In fact, we find it is difficult to fully exploit the Internet without mobile devices, but also difficult if left only with mobile devices, which we call 'mobile-only'. A central point of this post is that computer access and mobile access are complementary.

These findings build on prior scholarship, which emphasizes that mobile-only use of the Internet is likely to be inferior to computer-based use, an assertion that is made especially explicit in the review article by Napoli and Obar (2014).[3] Our 2019 data suggests that this may be too strong of a claim. While we find the activity of mobile-only users is limited compared to users who have both computer and mobile access to the Internet, in certain ways mobile-only might well be superior to having access only via a computer, which we call computer-only access. Among Internet users the group that participates in the fewest activities is individuals who access the Internet only through a computer, such as a computer in their home.

The following sections provide detail on the growth of mobile devices and the mobile Internet and how they are used, identifying several modes of use defined by the combination of mobile devices, computers and the Internet. We then look in detail at who uses and does not use mobile Internet alone or in conjunction with other devices, arguing that this could make a substantial difference the role mobile technology will play in society. In the course of this discussion we will answer several questions. Are mobile Internet services substituting or complementing other forms of

[2] Richard Ling (2012), *Taken For Grantedness: The Embedding of Mobile Communication into Society*. Cambridge, MA: MIT Press.
[3] Napoli, Philip M. and Obar, Jonathan A. (2014). The Emerging Mobile Internet Underclass: A Critique of Mobile Internet Access. *The Information Society* 30: 323 – 334.

Internet access? Is mobile changing what people do online? Has the household remained the major place from which people access the Internet?

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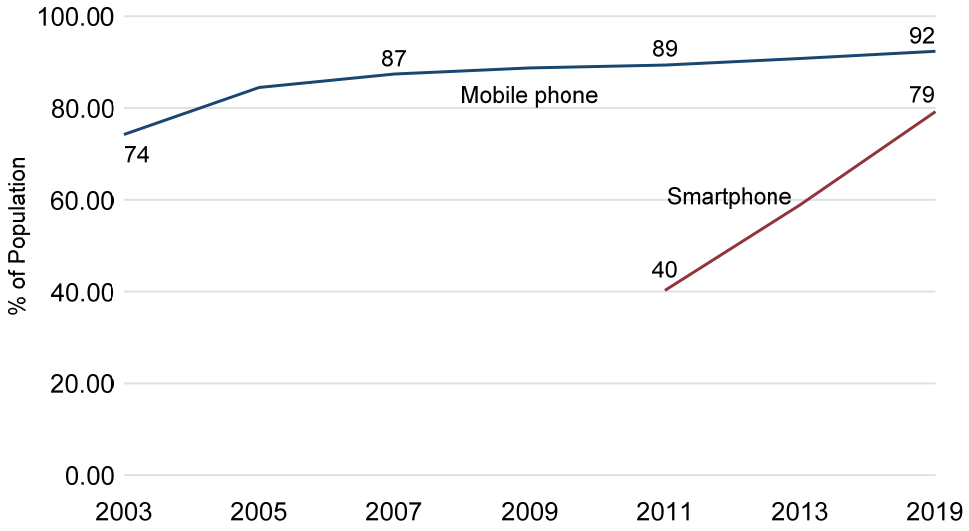
The Growth of Mobile Internet Use

As early as 2003, four years before the introduction of the iPhone, 74 percent of adults in Britain were using a mobile phone. Increasing numbers of individuals had become accustomed to carrying a mobile phone with them and not only using it for phone calls, but increasingly for texting. The later shift from a mobile phone to a mobile Internet phone (smartphone) was to some degree an incremental adjustment for the many already familiar with both the Internet and mobile. As a result the mobile Internet took off quickly, moving from 40 percent of adults in Britain in 2011 to nearly 80 percent (79%) in 2019. The nature of this trend raises questions; such as, who are the 20 percent not using the mobile Internet, or using mobile phones that cannot connect to the Internet. Does mobile use complement or substitute for other devices? To what extent are there mobile-only or mobile-dependent users?[4] How

[4] Napoli, P. M., & Obar, J. A. (2014). The Emerging Mobile Internet Underclass: A Critique of Mobile Internet Access, *The Information Society*, *30*(5), 323-334; Fernandez, L., Reisdorf, B. C., and Dutton, W. H. (2019), 'Urban Internet Myths and Realities: A Detroit Case Study', *Information Communication and Society*, June: DOI: https://doi.org/10.1080/1369118X.2019.1622764 and Reisdorf, B., Fernandez, L., Hampton, K. N., Shin, I., and Dutton, W. H. (forthcoming), 'Mobile Phones Will Not Eliminate Digital and Social Divides: How Variation in Internet Activities Mediates the Relationship between Type of Internet Access and Local Social Capital in Detroit', *Social Science Computer Review*, pp. forthcoming.

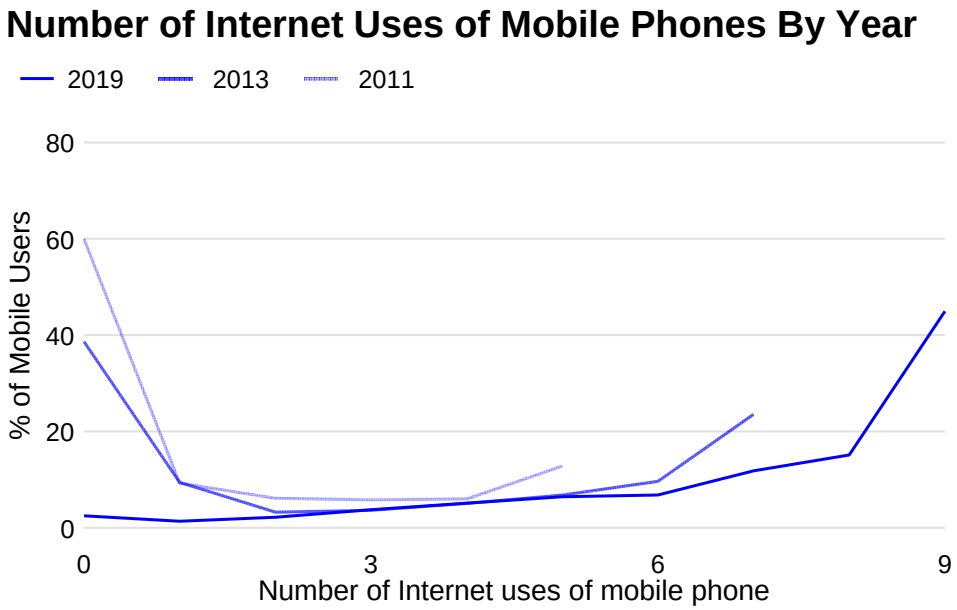
prominent are the mobile-dependent users? Are mobile-only users disadvantaged compared to those who use multiple devices to access the Internet?

Mobile Phone use by Year (QM1)



OxIS 2003 N=2,029; 2005 N=2,185; 2007 N=2,350; 2009 N=2,013; 2011 N=2,057; 2013 N=2,657; 2019 N=1,818
The difference in mobile phone use between 2013 and 2019 is not statistically significant.

As late as 2013, nearly a third (30%) of those who had a mobile phone did nothing online via their mobile. Individuals simply used their mobile for calls and texts. The mobile phone was primarily a phone! Things changed. Six years later, by 2019, almost no one with a mobile phone used it only as a phone. In fact, only two percent failed to use their mobile for any online services, continuing to use it only for calls and texting but not otherwise going online. This shift is reflected in the substantial increases in the percent of individuals using their mobile device for Internet applications. We only asked about five Internet uses in 2011, but only 33 percent used all five. We asked about nine Internet uses in 2019, and nearly half (45%) of those with a smartphone were using nine online services.



Mobile phone users. OxIS 2011 N=1,831; 2013 N=2,413; 2019 N=1,679

Patterns of Use: What People Do On Mobile

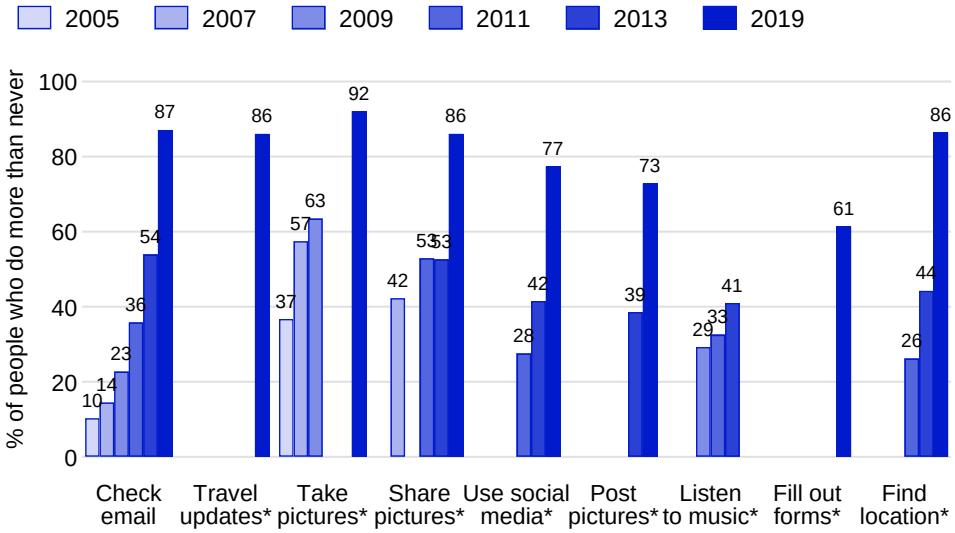
Beyond the sheer number of activities, what are networked individuals doing on mobile devices? Of the activities we asked about, 80 percent of mobile Internet users do nearly all of them. These include taking (92%) and sharing (86%) photos, checking email (87%), finding locations (86%), and checking travel plans (86%). The diffusion of mobile Internet could account for the rising prominence of these activities, but likewise, the value of these activities might well account for the rapid diffusion of mobile Internet.

Close behind are activities related to social media. About three-quarters of mobile Internet users participate in these social media activities, such as specifically using social media (77%), and posting pictures online (73%).

Moreover, the use of all these common features have increased every year since first reported. For example, in 2005, only 10 percent of mobile users checked their email online, compared to 87 percent by 2019. Taking pictures was popular even in 2005, with 37 percent saying they did this on their mobiles, but this also rose to 63 percent in 2019. In a shorter period of time, the use of social media moved from 26 percent of users in 2011 to 77 percent in 2019.

An example of a comparatively less-common mobile phone activity is filling out forms. In earlier years, you might have imagined that it was impossible to use a mobile to complete a form. As mobile improved, and sites were redesigned for mobile access over half (61%) of mobile users said they did this by 2019. Less than half of mobile users said they 'listen to music' on their mobile, and this is not dramatically higher than 2011, when 29 percent listened to music. Clearly, there are some common denominator activities, such as checking email, while other activities, such as listening to music, vary more across population segments.

Use of Features on Mobile Phones by Years (QH12)



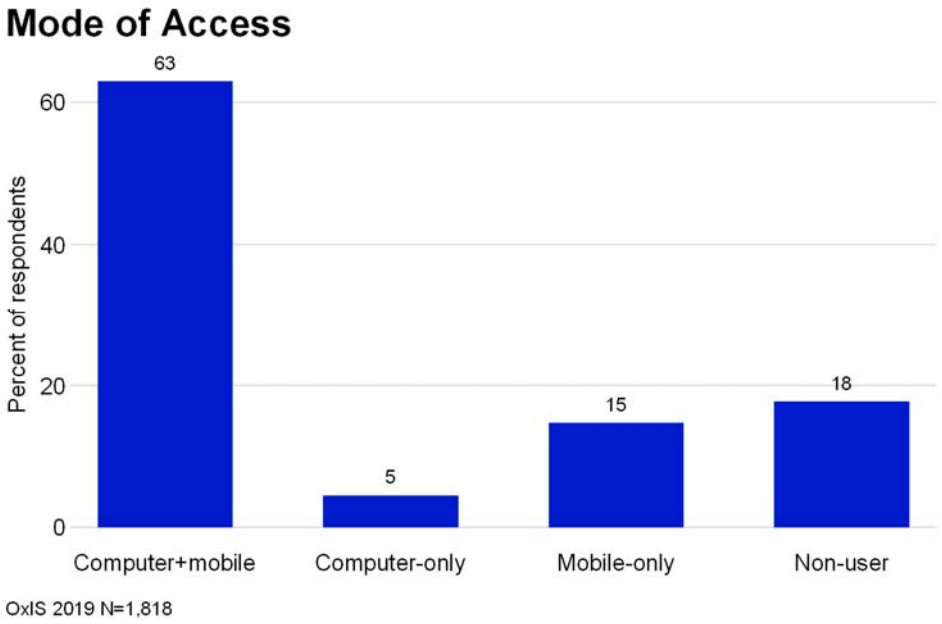
Mobile phone users. OxIS 2005 N=1,857; 2007 N=2,070; 2009 N=1,789; 2011: N=1,831; 2013 N=2,413; 2019 N=1,679
*Note: Question not asked in all years.

Alternative Modes of Access: Introducing "Mobile-Only" Users

Generally, the mobile Internet is being used as a complement to access through other devices, such as a laptop or desktop computer. Fully 63 percent of our sample indicated that they use mobile Internet as well as another computer device. This is in line with the rise of what we have called Next Generation Users (NGU), individuals who use three or more devices, some of which are mobile, to access the Internet, as discussed in our report on digital divides.[5]

[5] Click on this link for our paper discussing digital divides: "OxIS 2019: Digital Divides in Britain are Narrowing but Deepening".

Only 5 percent of our sample access the Internet using a computer without any mobile devices. This was the most common mode of access in the early years of the Internet, when most people used a desktop computer linked to the Internet via a modem tied to their phone. In the early years of Internet use in Britain, most Internet users did not perceive a need for any other mode of access. But along with the decline of computer-only users, we also see a new type of user – the 'mobile-only' user, with 15 percent of the sample saying they only access the Internet via a mobile device.

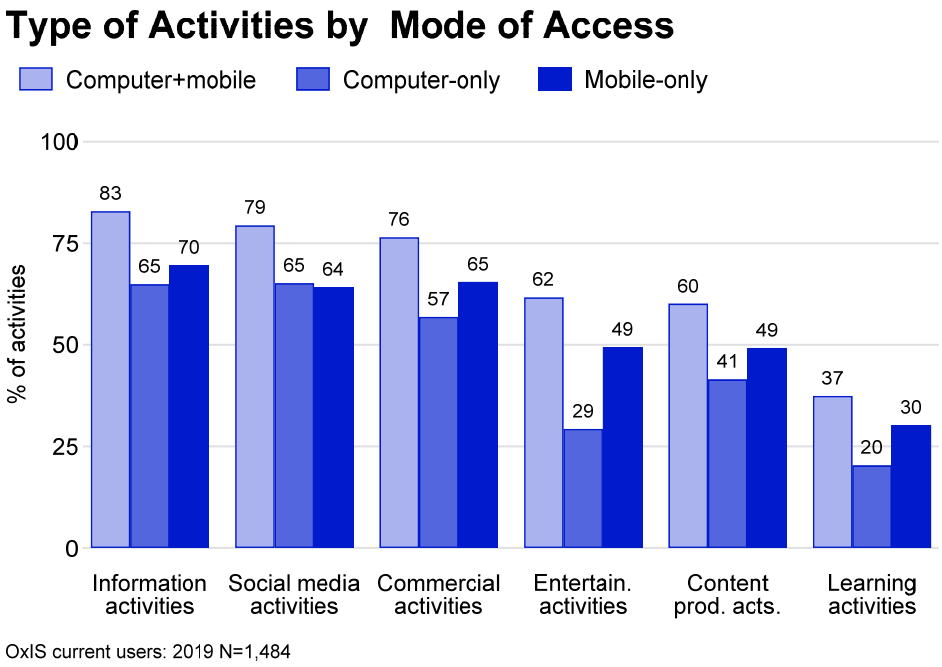


Does Mode of Access matter?

Do different modes of access make a difference in how individuals use the Internet? Next generation users, who use three or more devices, some of which are mobile, have the most flexibility in how they use the Internet.[6] They are best represented by the computer+mobile category of users. One concern is whether computer-only or mobile-only users are disadvantaged compared to those who have multiple forms of access. To address this concern we looked at how often respondents did various activities.

[6] On Next Generation Users see: Dutton, W.H. & Blank, G. 2014. "The emergence of Next Generation Internet users" *International Economics and Economic Policy*. 11:29-47. DOI:10.1007/s10368-013-0245-8.

The following bar charts show that computer+mobile users are most likely to do every type of activity studied.[7] The most disadvantaged people in this sense are computer-only users, who were least likely to engage in any of these activities, with the exception of using social media, even though a majority still participated in all of these activities. Mobile-only users are an intermediate group: they do most activities more than computer-only respondents but less than computer+mobile users.



OxIS current users: 2019 N=1,484

For example, patterns of use by mobile-only users are more similar to computer+mobile users in entertainment and learning activities. This makes sense because mobiles are popular entertainment devices for music, videos or games and learning activities include going online to check a fact and learn how to do a DIY project (often involving video).

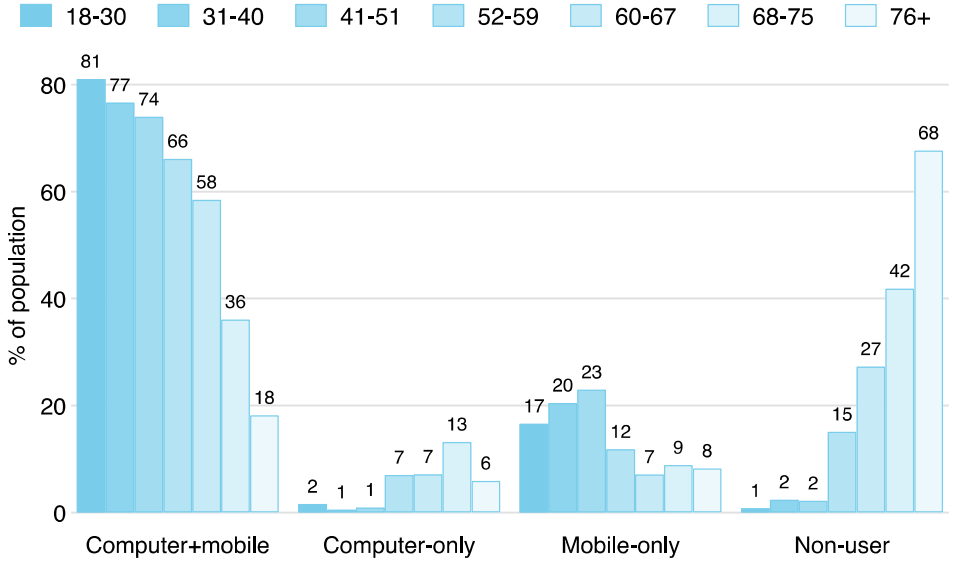
Characteristics of Mobile-only Users

This raised the question of who are the mobile-only users compared to users of other modes? There are relationships between the demographic characteristics of individuals and modes of access. The simplest way to see these relationships is with bar charts of the individual variables. The first graph shows how computer+mobile

[7] The number of activities included in each index is: for information-seeking, 8 activities; for social media, 16 activities; for commercial, 7 activities; for entertainment, 10 activities; for content production, 10 activities and for learning, 4 activities.

use declines with age, while using only a computer increases with age until 76 years of age and over when it declines. That is, use of only a computer, without mobile, is more concentrated among older users. Non-use of the Internet is strongly related to age, particularly among retired people; 68 percent of those over 76 years of age are non-users. Mobile-only use is most common among the younger age groups; while the modal category is not the youngest, it is 41-51 year-olds. But the relationship is not only a matter of age.

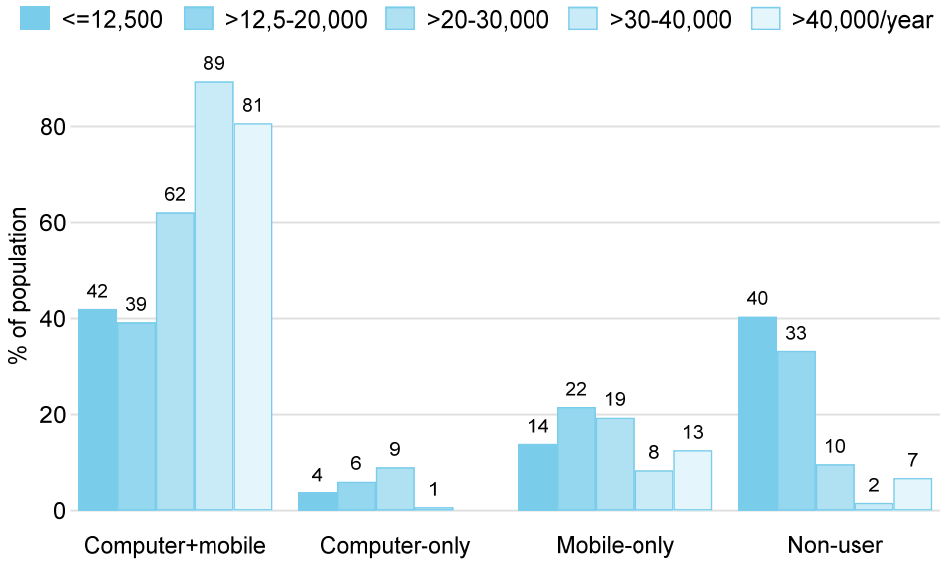
Age by Mode of Access (QD1)



OxIS 2019 N=1,818

The bar chart below shows that computer+mobile use is positively related to income, and non-users tend to be less well-to-do. Those with the highest incomes are the most likely to be computer+mobile users. Computer-only users are almost entirely concentrated among those earning less than £40,000. While most mobile-only users earn less than £40,000 as well, 35 percent of mobile-only users earn between £50,000 and £60,000. In general, computer+mobile users have the most financial resources.

Income by Mode of Access (SC2)

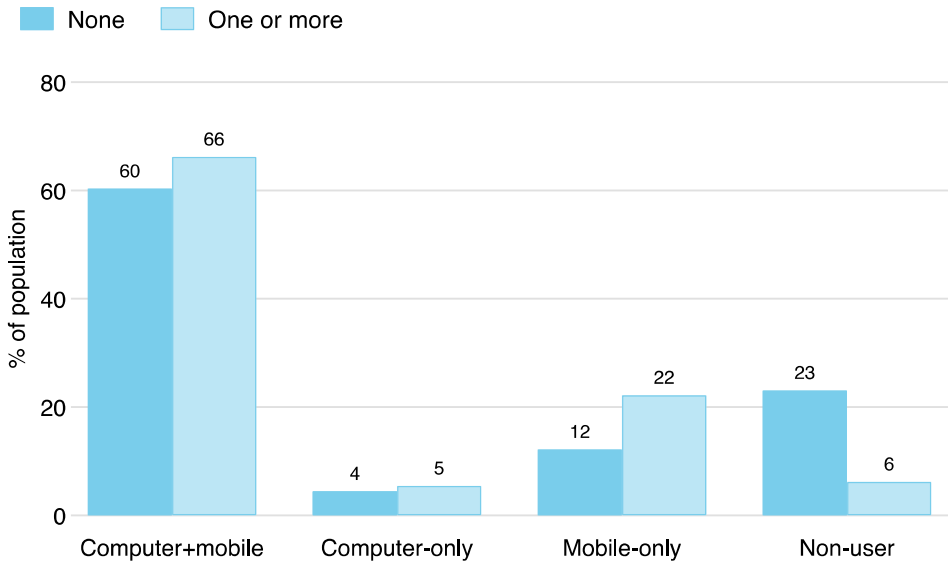


OxIS 2019 N=1,818

Simple zero-order relationships exist between many other demographic categories and modes of use, but age and income are the strongest relationships. They explain many of the other relationships in the data; for example, those who have lost their partner, such as being widowed, are most likely to be non-users, but this is better explained by their (typically) advanced age and low income. Similarly, more educated people are more likely to be computer+mobile users. People with less education tend to be non-users, or computer-only users. Mobile-only use seems unrelated to education, but is tied to literacy (discussed below). These relationships seem better explained by age cohort effects. Generally, a number of demographic variables are related to the use or non-use of the Internet but are not systematically related to mobile-only or computer-only access. Some demographic differences, such as gender, are not related to mode of access.

Mode of access does appear to be related to the number of children in the household. Those with one or more children in the household are more likely to be mobile-only users.

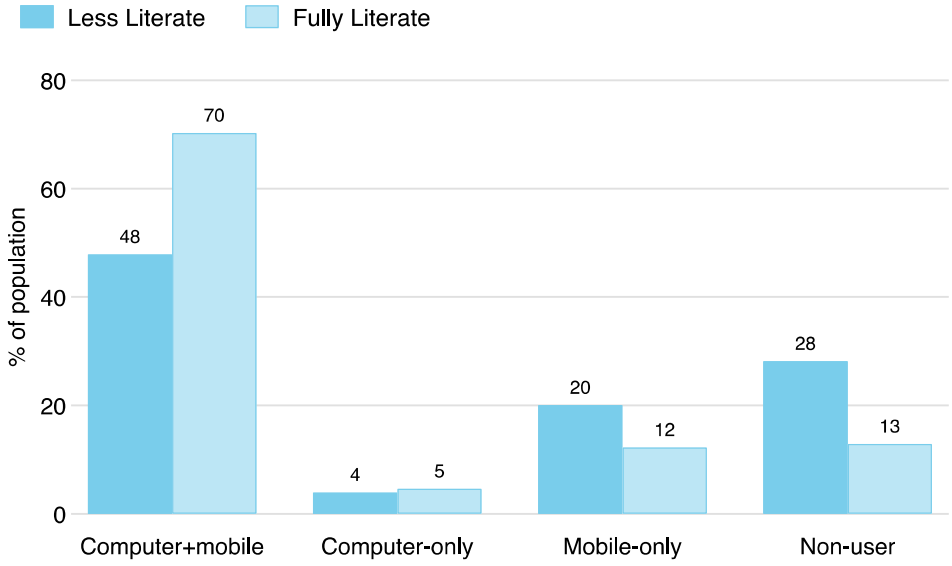
Children in Household by Mode of Access (QD6)



OxIS 2019 N=1,818

Functional literacy also matters. We asked respondents how confident they are in their ability to read and write. Individuals who perceive themselves to be less literate are more likely to be mobile-only users or non-users.

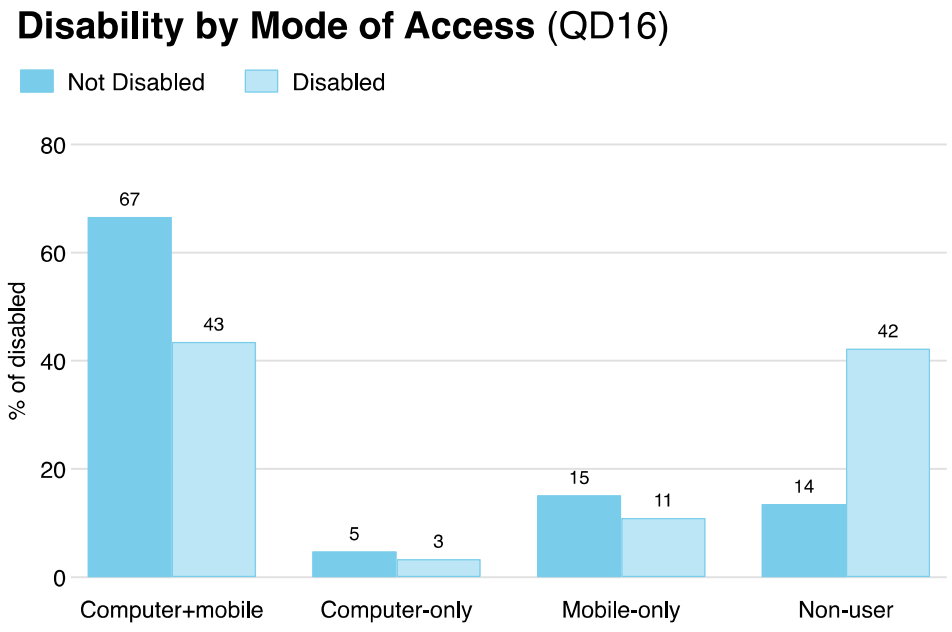
Functional Literacy by Mode of Access (QA10)



OxIS 2019 N=1,818

Finally, it is noteworthy that disabled individuals are more likely to be non-users and less likely to be computer+mobile users; they are also less likely to be computer-only or mobile-only users. Individuals with disabilities are dramatically more likely to be

non-users. Accordingly, mobile-only devices do not appear to be an easier mode of Internet access for disabled individuals.

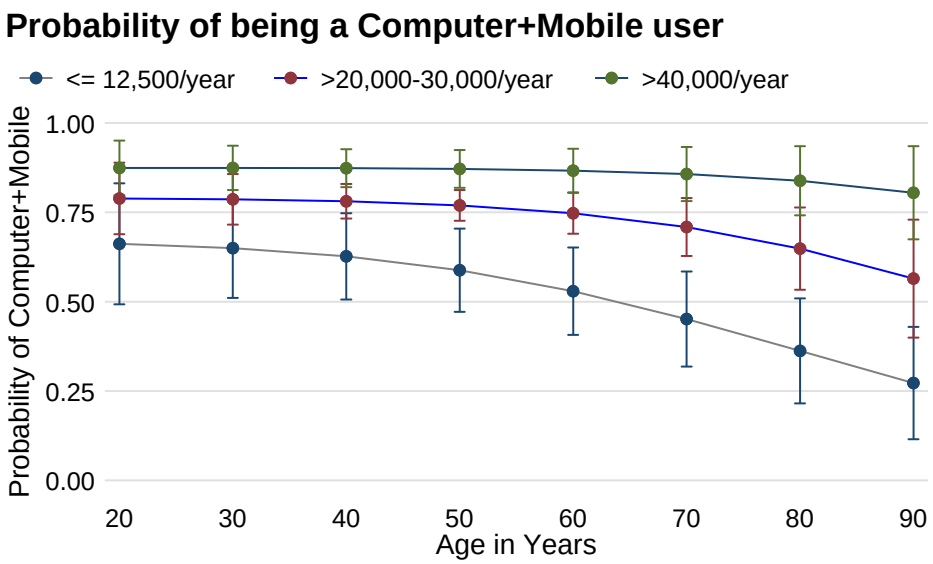


Disabled. OxIS 2019 N=264

These results raise the question of which particular characteristics are relatively more important. To answer this question we ran multinomial logistic regressions using mode of access as our dependent variable. While not reported in detail here, we found that age was significant and positively related to the computer-only mode of access. Computer-only users are older than computer+mobile users. Mobile-only users are the youngest group. Income was significant and negative, meaning that computer-only users and mobile-only users are not as wealthy as computer+mobile users. In line with income and age differences, we also found fewer computer-only users living in the West Midlands, South East of England, and London.

There is an interaction between age and income, which you can see in the three margins plots below. Margins plots hold all other variables at their means, while showing the effect of the particular variables of interest, in this case age and income. To limit the clutter in the graphs below, we only plot three of the five income categories. The vertical axis is the probability of being in a certain category of the dependent variable. The horizontal axis is always age in years.

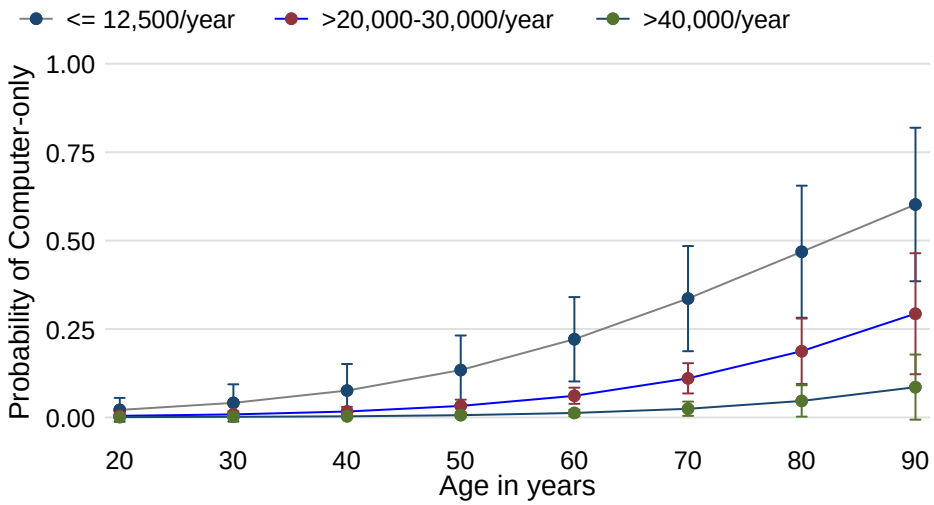
The first plot, shows the probability of being a computer+mobile user. The three lines are different income categories. The plot shows the marginal probability of being a computer+mobile user for different age and income categories. Notice the decreasing probability with age, and that low income people have a smaller probability than higher income people. The generally parallel lines indicate a significant effect for income and the slope of age shows the significant negative effect.



OxIS 2019 N=1,818

The next plot shows computer-only respondents. You can see that the probability of accessing the Internet only via a computer increases with age (again with an income effect). This says older people are much less likely to own mobiles. Notice also the probability of being a young computer–only user is essentially zero, regardless of income, rising to over 50 percent for low-income old people.

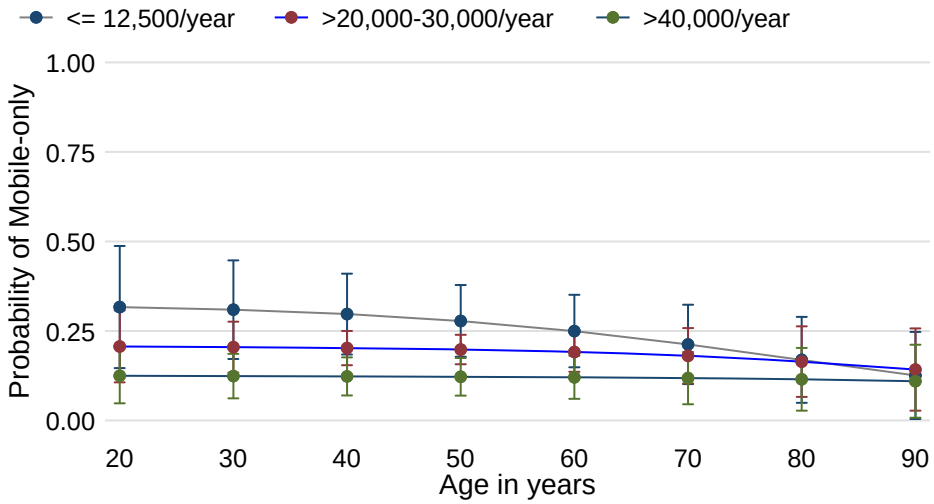
Probability of being a Computer-only user



OxIS 2019 N=1,818

Young people are most likely to be mobile-only users. The probability of being a mobile-only user generally decreases with age, more so for low income people. Again, note the parallel lines and the slope (at least for lower income people).

Probability of being a Mobile-only user



OxIS 2019 N=1,818

The point is that the relationship between age and income depends on what mode people use to access the Internet. The probability of being either a computer+mobile or a mobile-only user declines with age (but with different shapes); but for computer-only users the probability increases.

Conclusions

The main effect of the mobile transformation of Britain has been to embed the Internet more closely in the everyday lives of the public, enabling more people to use the Internet anywhere at any time. Closer embedding is possible because of the contrasting characteristics of computers versus mobile devices. Computers and mobile devices can be used for many of the same activities. For example, both screens can be used for social media, video entertainment or listening to podcasts. But computers and mobile devices are also different. Much has been made of the superiority of a computer with its larger screen, faster processor, more storage and better keyboard. All these combine to make computers better for many purposes, like producing graphics, long-form text, or designing websites. But this looks at the issue from a computer-centric point of view. From a more mobile-centric perspective, things look different. A mobile is also superior for certain purposes. For example, it can be used for payment in stores. The easy access to address books, a camera and photos (or videos) makes it easy to send quick, spur-of-the-moment photos, videos or short texts and while on the move. Mobiles are notably social devices, even if sometimes criticized as for undermining interpersonal communication. From this perspective computers and mobile devices are complementary. Computer+mobile users have the most technological advantages to embed the Internet most closely into their lives.

This continues a pattern that will be familiar to anyone acquainted with the digital divide. Those with multiple devices, including mobile devices, are the most embedded and advantaged in Britain as it increasingly becomes a digital society, but some are left behind. Non-users have been left on the wrong side of the digital divide, but a small proportion of the public have been left behind by being overly dependent on mobile, the mobile-onlies, while others left behind by missing the opportunities offered through mobile, the computer-onlies. These ‘onlies’ do less online compared to their counterparts who have multiple devices, some of which are mobile. The ‘onlies’ also tend to have lower incomes and less education; in general, lower status. Subsequent reports will look more closely at the ways in which the Internet has become embedded in work and everyday life, and help you to judge

whether being a non-user, mobile-only user or computer-only user is an advantage or disadvantage in today's world.

Is Mobile Closing the Digital Divide?

One prominent question has been whether the rise of the mobile Internet will provide more people with access to the Internet and help close the digital divide? These results suggest the answer is 'no'. Mobile users do tend to be more active than computer-only users. However, given that 18 percent of the sample remain offline – non-users — it seems that the mobile is predominantly complementary, a new and additional mode of access rather than a device that is effectively closing the digital divide.

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